

REMARKS

Applicant has thoroughly reviewed the outstanding Office Action including the Examiner's remarks and the references cited therein. The following remarks are believed to be fully responsive to the Office Action and are believed to render the claims at issue patentable. The amendments do not present new matter and are supported by the Specification.

Applicant has cancelled claims 10-18 without prejudice. Applicants expressly reserve the right to present the claims 10-18, their subject matter, or other claims, in one or more divisional, continuation, or continuation-in-part applications at a later date.

Objections

The Examiner has objected to the recitation of "Kbar" throughout the claims and specification. As such, appropriate amendments have been made to recite "kbar".

The Examiner has objected to the recitation of "an cubic" in claim 1. As such, appropriate amendment to recite "a cubic" has been made.

The Examiner has objected to the recitation of "can be" in claims 2 and 20 as awkward and unclear. As such, claims 2 and 20 have been amended to recite "is".

The Examiner has objected to the recitation of "of it theoretical density" in claim 19. As such, appropriate amendment has been made to recite "of its theoretical density".

Claim Rejections Under 35 U.S.C. §112

Claims 1, 3, 7, 19, 21, and 24 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner has rejected claim 1 because the recitation of “said perform” lacks proper antecedent basis in the claims. As such, Applicant has amended claim 1 to recite “said feedstock”.

The Examiner has rejected claim 1 because the claim has two steps labeled “(b)” which renders the claim indefinite. As such, Applicant has amended claim 1 to recite three (3) steps, (a) – (c).

The Examiner has rejected claim 3 because the recitation of “said perform” lacks proper antecedent basis in the claims. As such, Applicant has amended claim 3 to recite “said feedstock”.

The Examiner has rejected claim 7 because the recitation “wherein step (b)” is indefinite because claim 1 has two steps labeled as “(b)”. The present amendment to claim 1 therefore renders the rejection of claim 7 moot. As such, claim 7 properly refers to step (b) of claim 1.

The Examiner has rejected claim 19, line 7 because the recitation “its” is indefinite. The Applicant respectfully maintains that such recitation is definite and proper. The language at issue is “(b) subjecting said feedstock to pressures in excess of about 2 kbar and temperatures above about 800°C for time adequate to increase the density of said feedstock to above about 60% of its theoretical density”. The Applicant states that “its theoretical density” properly refers to the feedstock’s theoretical density. This is apparent from the fact that step (b) is discussing the feedstock. The use of “its” is also grammatically sound in that the pronoun “its” is referring to the noun immediately preceding it in the sentence, “feedstock”. As such, claim 19 remains unchanged in this regard and definite.

The Examiner has rejected claim 19 because the claim has two steps labeled “(b)” which renders the claim indefinite. As such, Applicant has amended claim 19 to recite three (3) steps, (a) – (c).

The Examiner has rejected claim 21 because the recitation of “said perform” lacks proper antecedent basis in the claims. As such, Applicant has amended claim 21 to recite “said feedstock”.

The Examiner has rejected claim 24 because the recitation “wherein step (b)” is indefinite because claim 19 has two steps labeled as “(b)”. The present amendment to claim 19 therefore renders the rejection of claim 24 moot. As such, claim 24 properly refers to step (b) of claim 19.

Claim Rejections Under 35 U.S.C. §103(a)

The Examiner has rejected claims 1, 2, 4-20, 22-26 under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Abstract 48-5692 (“JP ‘692”). The Examiner states that JP ‘692 suggests the instantly claimed process to form a perovskite, e.g., MgPbO_3 , but may differ in that forming a cubic perovskite or increasing the density above about 60% of its theoretical density are not stated.

The Applicant respectfully traverses the Examiner’s rejection.

JP ‘692 discloses a process of forming a Mg plumbate hydrate from an aqueous solution of an alkali metal plumbate, and an aqueous solution of a magnesium salt subjected to simultaneous heating and pressing. The mixture is heated to about 1000°C under about 50 kbars.

To anticipate a claim, a reference must disclose each and every element of the claim. Lewmar Marine v. Varient Inc., 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987). For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A 1970).

It is maintained that not every element of the claimed process is taught by the JP '692 reference nor is the presently claimed invention rendered obvious by the '692 reference.

There are two independent claims in the present application, claim 1 and 19. These claims are directed toward a method of increasing the density of a perovskite comprising 3 steps: placing a perovskite feedstock in a high-pressure cell of a high pressure/high temperature apparatus; subjecting the feedstock to pressures of about 2 kbar and temperatures of about 800°C for a specified time to increase the density of the feedstock; and recovering the perovskite.

The Applicant's process is directed to a process for increasing the density of an already formed feedstock (preformed or powdered) perovskite. The starting material of the presently claimed process is a solid perovskite. By contrast, the JP '692 reference teaches a method of forming a perovskite by mixing two aqueous solutions and subjecting them to high temperature and pressure. The method of JP'692 therefore fails to teach a method of increasing the density of a perovskite comprising the three recited steps in claims 1 and 19, respectively. It is therefore not obvious to one skilled in the art to produce a densified perovskite under high temperature and pressure from the reading a reference that teaches forming a perovskite from aqueous solutions. Neither of the solutions are a perovskite feedstock in the JP '692 patent. Upon a reading of the JP '692 patent, one skilled in the art is not motivated to use a high temperature and pressure process to densify an existing powdered (solid, non-aqueous) perovskite. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. §103(a)

The Examiner has rejected claims 1, 2, 4-20, 22-26 under 35 U.S.C § 103(a) as being unpatentable over DeVries, et al. The Examiner states that DeVries suggests the instantly claimed process to form a perovskite, e.g., PbCrO_3 , but may differ in that the time or increasing the density above about 60% of its theoretical density are not stated.

The Applicant respectfully traverses the Examiner's rejection.

DeVries discloses a process of forming PbCrO_3 at high pressures above a pressure temperature line. This reference teaches that PbCrO_3 may be quenched and retained at 1 atm but decomposition results on heating above 275 degrees at the same pressure (1 atm). The perovskite is synthesized from mixtures of $\text{PbO}:\text{CrO}_2$ as well as from several other mixtures of compounds in the Pb-Cr-O system. This reference teaches that PbCrO_3 is considered to be an equilibrium phase at high pressures.

It is maintained that a reading of the DeVries reference does not render the present invention obvious.

The Applicant's process is directed to a process for increasing the density of an already formed perovskite (solid, non-aqueous). By contrast, the DeVries reference teaches a method of forming a perovskite by compounds of the Pb-Cr-O system and maintaining an equilibrium phase of the resulting perovskite. The method of the DeVries reference therefore fails to motivate one skilled in the art to arrive at a method of increasing the density of a perovskite comprising the three recited steps in claims 1 and 19, respectively.

It is not obvious to one skilled in the art to produce a densified perovskite under high temperature and pressure from the reading a reference that teaches forming a perovskite from a Pb-Cr-O system. The DeVries reference is concerned about maintaining a stable substance, not about increasing the density of a feedstock (powdered solid form) of a perovskite under high temperature and pressure. The DeVries reference solely teaches that maintaining a limited range of temperature and pressure result in a stable product and that decomposition of the substance occurs at lower pressures. Upon a reading of the DeVries reference, one is not motivated to use a high temperature and pressure process to densify an existing powdered (solid, non-aqueous) perovskite. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim Rejections Under 35 U.S.C. §103(a)

The Examiner has rejected claims 10-18 under 35 U.S.C § 103(a) as being unpatentable over Matijevic, et al (U.S. Patent No. 5,900,223). Claims 10-18 of the present invention are hereby cancelled from the present application. Therefore, the rejection over Matijevic is moot. Applicant respectfully requests its withdrawal.

Dependent Claim Rejections

The Examiner has objected to claims 3 and 21 as being dependent on a rejected claim. As such, the present arguments as applied to independent claims 1 and 19, apply to all dependent claims herein. The Applicant respectfully requests that the present objection be removed in light of the preceding arguments.

CONCLUSION

In light of the above amendments and remarks, Applicant respectfully submits that all pending claims as currently presented are in condition for allowance and hereby respectfully request reconsideration. Applicant respectfully requests the Examiner to pass the case to issue at the earliest convenience.

Please note that this application has been assigned to Diamond Innovations. Copies of the assignment and power of attorney documents, which are being officially filed separately, are attached for Examiner's reference. Our new docket number for this application is 128346.41801.

Respectfully submitted,
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